

## Thick Film Chip Resistors

Type: **ERJ XG, 1G, 2G, 3G, 6G, 8G, 14, 12, 12Z, 1T**



### Features

- Small size and lightweight
- High reliability  
Metal glaze thick film resistive element and three layers of electrodes
- Compatible with placement machines  
Taping packaging available
- Suitable for both reflow and flow soldering
- Reference Standards  
IEC 60115-8, JIS C 5201-8, EIAJ RC-2134B
- AEC-Q200 qualified (Exemption ERJXG)
- RoHS compliant

■ **As for Packaging Methods, Land Pattern, Soldering Conditions and Safety Precautions,**  
Please see Data Files

### Explanation of Part Numbers

- ERJXGN, 1GN, 2GE, 3GE, 6GE, 8GE, 14, 12, 12Z, 1T Type,  $\pm 5\%$

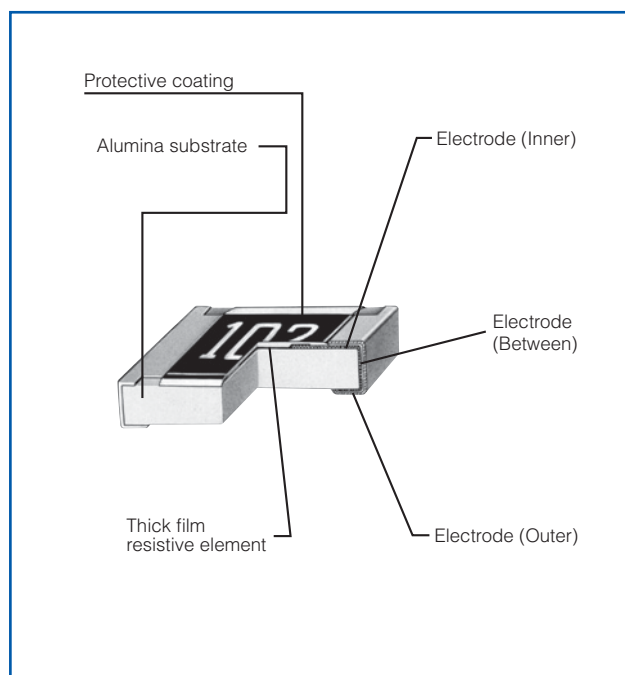
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|----|----|----|
| E | R | J | 3 | G | E | Y | J | 1 | 0  | 2  | V  |

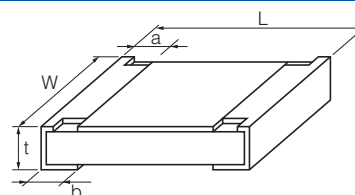
| Product Code              | Size, Power Rating |       | Marking  |                                                                                                                                                                                                                            | Resistance Tolerance        |      | Packaging Methods |      |                                                |                            |  |
|---------------------------|--------------------|-------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------|-------------------|------|------------------------------------------------|----------------------------|--|
| Thick Film Chip Resistors | Code               | Inch  | Power R. | Code                                                                                                                                                                                                                       | Marking                     | Code | Tolerance         | Code | Packaging                                      | Part No.                   |  |
|                           | XGN                | 01005 | 0.031 W  | Y                                                                                                                                                                                                                          | Value Marking on black side | J    | $\pm 5\%$         | Y    | Pressed Carrier Taping W8P2, 20,000 pcs.       | ERJXGN                     |  |
|                           | 1GN                | 0201  | 0.05 W   | *Nil                                                                                                                                                                                                                       | No marking                  | 0    | Jumper            | U    | Embossed Carrier Taping W4P1, 40,000 pcs.      |                            |  |
|                           | 2GE                | 0402  | 0.1 W    | <b>Resistance Value</b><br>The first two digits are significant figures of resistance and the third one denotes number of zeros following.<br>Decimal Point is expressed by R as 4.7 = 4R7.<br>Jumper is expressed by R00. |                             |      |                   |      |                                                |                            |  |
|                           | 3GE                | 0603  | 0.1 W    |                                                                                                                                                                                                                            |                             |      |                   |      |                                                |                            |  |
|                           | 6GE                | 0805  | 0.125 W  |                                                                                                                                                                                                                            |                             |      |                   |      |                                                |                            |  |
|                           | 8GE                | 1206  | 0.25 W   |                                                                                                                                                                                                                            |                             |      |                   |      |                                                |                            |  |
|                           | 14                 | 1210  | 0.5 W    |                                                                                                                                                                                                                            |                             |      |                   |      |                                                |                            |  |
|                           | 12                 | 1812  | 0.75 W   |                                                                                                                                                                                                                            |                             |      |                   |      |                                                |                            |  |
|                           | 12Z                | 2010  | 0.75 W   |                                                                                                                                                                                                                            |                             |      |                   |      |                                                |                            |  |
|                           | 1T                 | 2512  | 1 W      |                                                                                                                                                                                                                            |                             |      |                   |      |                                                |                            |  |
|                           |                    |       |          |                                                                                                                                                                                                                            |                             |      |                   | V    | Punched Carrier Taping 2 mm pitch, 15,000 pcs. | ERJ1GN                     |  |
|                           |                    |       |          |                                                                                                                                                                                                                            |                             |      |                   | X    | Punched Carrier Taping 2 mm pitch, 10,000 pcs. | ERJ2GE                     |  |
|                           |                    |       |          |                                                                                                                                                                                                                            |                             |      |                   | Y    | Punched Carrier Taping 2 mm pitch, 20,000 pcs. |                            |  |
|                           |                    |       |          |                                                                                                                                                                                                                            |                             |      |                   | V    | Punched Carrier Taping 4 mm pitch, 5,000 pcs.  | ERJ3GE<br>ERJ6GE<br>ERJ8GE |  |
|                           |                    |       |          |                                                                                                                                                                                                                            |                             |      |                   | U    | Embossed Carrier Taping 4 mm pitch, 5,000 pcs. | ERJ14<br>ERJ12<br>ERJ12Z   |  |
|                           |                    |       |          |                                                                                                                                                                                                                            |                             |      |                   |      | Embossed Carrier Taping 4 mm pitch, 4,000 pcs. | ERJ1T                      |  |

\* When omitted, the rest of the P/N factors shall be moved up respectively.  
(Only XGN, 1GN, 2GE type)

## Construction



## Dimensions in mm (not to scale)



| Part No.<br>(inch size) | Dimensions (mm) |                 |                 |                 |                 | Mass (Weight)<br>(g/1000 pcs.) |
|-------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|--------------------------------|
|                         | L               | W               | a               | b               | t               |                                |
| ERJXG<br>(01005)        | 0.40 $\pm$ 0.02 | 0.20 $\pm$ 0.02 | 0.10 $\pm$ 0.03 | 0.10 $\pm$ 0.03 | 0.13 $\pm$ 0.02 | 0.04                           |
| ERJ1G<br>(0201)         | 0.60 $\pm$ 0.03 | 0.30 $\pm$ 0.03 | 0.10 $\pm$ 0.05 | 0.15 $\pm$ 0.05 | 0.23 $\pm$ 0.03 | 0.15                           |
| ERJ2G<br>(0402)         | 1.00 $\pm$ 0.05 | 0.50 $\pm$ 0.05 | 0.20 $\pm$ 0.10 | 0.25 $\pm$ 0.05 | 0.35 $\pm$ 0.05 | 0.8                            |
| ERJ3G<br>(0603)         | 1.60 $\pm$ 0.15 | 0.80 $\pm$ 0.15 | 0.30 $\pm$ 0.20 | 0.30 $\pm$ 0.15 | 0.45 $\pm$ 0.10 | 2                              |
| ERJ6G<br>(0805)         | 2.00 $\pm$ 0.20 | 1.25 $\pm$ 0.10 | 0.40 $\pm$ 0.20 | 0.40 $\pm$ 0.20 | 0.60 $\pm$ 0.10 | 4                              |
| ERJ8G<br>(1206)         | 3.20 $\pm$ 0.05 | 1.60 $\pm$ 0.15 | 0.50 $\pm$ 0.20 | 0.50 $\pm$ 0.20 | 0.60 $\pm$ 0.10 | 10                             |
| ERJ14<br>(1210)         | 3.20 $\pm$ 0.20 | 2.50 $\pm$ 0.20 | 0.50 $\pm$ 0.20 | 0.50 $\pm$ 0.20 | 0.60 $\pm$ 0.10 | 16                             |
| ERJ12<br>(1812)         | 4.50 $\pm$ 0.20 | 3.20 $\pm$ 0.20 | 0.50 $\pm$ 0.20 | 0.50 $\pm$ 0.20 | 0.60 $\pm$ 0.10 | 27                             |
| ERJ12Z<br>(2010)        | 5.00 $\pm$ 0.20 | 2.50 $\pm$ 0.20 | 0.60 $\pm$ 0.20 | 0.60 $\pm$ 0.20 | 0.60 $\pm$ 0.10 | 27                             |
| ERJ1T<br>(2512)         | 6.40 $\pm$ 0.20 | 3.20 $\pm$ 0.20 | 0.65 $\pm$ 0.20 | 0.60 $\pm$ 0.20 | 0.60 $\pm$ 0.10 | 45                             |

## Ratings

### [For Resistor]

| Part No.<br>(inch size) | Power Rating<br>at 70 °C<br>(W) | Limiting Element<br>Voltage <sup>(1)</sup><br>(V) | Maximum Overload<br>Voltage <sup>(2)</sup><br>(V) | Resistance<br>Tolerance<br>(%) | Resistance<br>Range<br>( $\Omega$ ) | T.C.R.<br>( $\times 10^{-6}/^{\circ}\text{C}$ )                                                     | Category<br>Temperature Range<br>( $^{\circ}\text{C}$ ) |
|-------------------------|---------------------------------|---------------------------------------------------|---------------------------------------------------|--------------------------------|-------------------------------------|-----------------------------------------------------------------------------------------------------|---------------------------------------------------------|
| ERJXG<br>(01005)        | 0.031                           | 15                                                | 30                                                | $\pm 5$                        | 4.7 to 1 M (E24)                    | <10 $\Omega$ : -100 to +600<br>10 $\Omega$ to 100 $\Omega$ : $\pm 300$<br>100 $\Omega$ <: $\pm 200$ | -55 to +125                                             |
| ERJ1G<br>(0201)         | 0.05                            | 25                                                | 50                                                | $\pm 5$                        | 1 to 10 M (E24)                     | <10 $\Omega$ :<br>-100 to +600                                                                      | -55 to +125                                             |
| ERJ2G<br>(0402)         | 0.1                             | 50                                                | 100                                               | $\pm 5$                        | 1 to 10 M (E24)                     |                                                                                                     | -55 to +155                                             |
| ERJ3G<br>(0603)         | 0.1                             | 75                                                | 150                                               | $\pm 5$                        | 1 to 10 M (E24)                     |                                                                                                     | -55 to +155                                             |
| ERJ6G<br>(0805)         | 0.125                           | 150                                               | 200                                               | $\pm 5$                        | 1 to 10 M (E24)                     |                                                                                                     | -55 to +155                                             |
| ERJ8G<br>(1206)         | 0.25                            | 200                                               | 400                                               | $\pm 5$                        | 1 to 10 M (E24)                     |                                                                                                     | -55 to +155                                             |
| ERJ14<br>(1210)         | 0.5                             | 200                                               | 400                                               | $\pm 5$                        | 1 to 10 M (E24)                     | 10 $\Omega$ to 1 M $\Omega$ :<br>$\pm 200$                                                          | -55 to +155                                             |
| ERJ12<br>(1812)         | 0.75                            | 200                                               | 500                                               | $\pm 5$                        | 1 to 10 M (E24)                     | 1 M $\Omega$ <:<br>-400 to +150                                                                     | -55 to +155                                             |
| ERJ12Z<br>(2010)        | 0.75                            | 200                                               | 500                                               | $\pm 5$                        | 1 to 10 M (E24)                     |                                                                                                     | -55 to +155                                             |
| ERJ1T<br>(2512)         | 1                               | 200                                               | 500                                               | $\pm 5$                        | 1 to 1 M (E24)                      |                                                                                                     | -55 to +155                                             |

(1) Rated Continuous Working Voltage (RCWV) shall be determined from  $\text{RCWV} = \sqrt{\text{Power Rating} \times \text{Resistance Values}}$ , or Limiting Element Voltage listed above, whichever less.

(2) Overload (Short-time Overload) Test Voltage (SOTV) shall be determined from  $\text{SOTV} = 2.5 \text{ (Only ERJ2G=2.0)} \times \text{RCWV}$  or max. Overload Voltage listed above whichever less.

### [For Jumper]

| Part No.<br>(inch size) | Rated Current<br>(A) | Maximum Overload Current<br>(A) |
|-------------------------|----------------------|---------------------------------|
| ERJXG (01005)           | 0.5                  | 1                               |
| ERJ1G (0201)            |                      |                                 |
| ERJ2G (0402)            |                      |                                 |
| ERJ3G (0603)            | 1                    | 2                               |
| ERJ6G (0805)            |                      |                                 |
| ERJ8G (1206)            |                      |                                 |
| ERJ14 (1210)            | 2                    | 4                               |
| ERJ12 (1812)            |                      |                                 |
| ERJ12Z (2010)           |                      |                                 |
| ERJ1T (2512)            |                      |                                 |

### Power Derating Curve

For resistors operated in ambient temperatures above 70 °C, power rating shall be derated in accordance with the figure below.

